

to find some suitable rapid method of fixing dried blood films to take the place of the slower method of fixing by heat. Various agents were tried without success, the main difficulty being in getting something to fix both the red and white cells equally well.

G. A. Tuttle experimented with solutions of chromic acid of various strengths. He eventually found that a 2 per cent. solution of chromic acid poured on the film and allowed to remain for exactly thirty seconds gave uniformly good results, both red and white cells taking up their special stains clearly and surely. Solley states that the nuclei and granules of the leucocytes stain quite as sharply as in the best specimens fixed by heat, while the protoplasm of the mononuclear lymphocytes is usually better stained than by the latter method.

After the chromic acid solution has been on the smear for thirty seconds it is thoroughly washed off, the excess of water being removed by tapping a corner of the square on filter paper. Ehrlich's triple stain is allowed to remain on the smear for three minutes. The stain is then washed off, the smear dried between filter-paper, and then mounted in balsam in the usual way.

Unfortunately, the article does not state whether the chromic acid is dissolved in water or alcohol, but it is inferred that the former is used.

SURGERY.

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Median Osteotomy of the Hyoid Bone as a Method of Performing Pharyngotomy.—VALLS (*Rev. de Chir.*, May 10, 1900) proposes this new operation in order to overcome some of the dangers and difficulties that surround the removal of malignant or benign growths from the pharynx or the base of the tongue, and that are met with in the complete removal of the tongue.

The method of operating is as follows: An incision in the median line is carried from the mental symphysis to the thyroid cartilage. The skin and subcutaneous tissue can be incised at one cut. The bleeding is insignificant. The next step is the denudation of the hyoid bone in the median line. The superficial cervical aponeurosis is incised, the myohyoid muscle is raised in the median line by using the grooved director, so that its upper border can

be severed from the hyoid bone in the median line. Here an arteriole or two may be met. The hyoid bone is then resected in the median line with the bone forceps. The two parts of the myohyoid can then be gradually separated with it, thus providing an opening about an inch and a half wide.

Two ways are open to the surgeon: Below is the thyrohyoid membrane, above the mucous membrane alone separates him from the pharynx. The closure of this wound is very simple after the operation has been completed. It is not necessary to attempt an osseous suture. The result is functionally as good if the muscle and fibrous tissues are sutured. The result in fibrous union is just as efficient from the functional stand-point.

A preliminary tracheotomy has not been found essential to successful operating when this incision is employed, except where the operation involves the larynx directly.

The superior route is to be employed in total removal of the tongue or removal of tumors from its base, while the other route is the best for attacking tumors of the pharynx, especially of the epiglottis, and foreign bodies.

The author formulates the following conclusions:

1. The median osteotomy of the hyoid bone is a simple, easy operation and essentially benign.
2. It permits the penetration into the pharynx and gives a better view and operative field than does Malgaigne's superhyoid operation. Foreign bodies, enucleable benign tumors, cancers limited to the epiglottis, and especially grave syphilitic lesions, are its indications.
3. It facilitates the removal of intramuscular tumors at the base of the tongue, lipomas, and hyoid cysts which are difficult to remove by the lateral route.
4. It facilitates the total amputation of the tongue in cases where the cancer is situated in the base. The amputation is complete, and is less dangerous by this method.
5. There are no remote sequelæ from the osteotomy. It leaves no deformity behind it or functional disability.

Two Cases of Oesophageal Diverticulum.—RICHARDSON (*Annals of Surgery*, May, 1900) reports the case of a gentleman, aged fifty-three years, who came to him in consultation, having had symptoms of an oesophageal diverticulum for some years. Although it had caused symptoms its presence was not discovered till a year after they commenced. An oesophageal bougie of considerable size can be passed without difficulty.

The diverticulum was found on the left side of the neck, with its orifice at about the level of the cricoid cartilage. It fills with the first food swallowed at a meal, but the distended pouch does not further interfere with deglutition. The pouch can be partly emptied by a voluntary muscular effort soon after eating. It can then be swabbed clean by the patient with a cotton-tipped bougie. In the past three years the diverticulum has increased in depth about one-half, and perhaps doubled its capacity. It held about one ounce at the first examination made by the author. The author at this time gave the opinion that the diverticulum, although not causing the patient serious inconvenience at the time, ought, in the near future, to be operated upon because of the tendency of these lesions to get worse. The operation

advised was external œsophagotomy with closure of the œsophageal wound immediately, and packing of the external wound for a day or two.

The patient was seen for the second time about five years later. There had been some increase in the dysphagia, and choking at table had been more troublesome. His general health had not suffered much. The probang could be passed into the pouch, but not by it. No tumor could be felt, whether the pouch was empty or not. The age of the patient and the increasing dysphagia led the author to operative intervention, as delay, with increasing years, would render the operation more dangerous. The danger of the formation of phlegmons and the setting up of a general sepsis was also considered.

The operation was performed under ether. The excessive flow of mucus was controlled by a hypodermatic of atropia, which was found very successful. The lateral incision along the anterior edge of the sternocleidomastoid was made. To get a clear view of the field the anterior belly of the omohyoid was cut. Especial care was taken to avoid the recurrent laryngeal nerve and thoracic duct. The great vessels of the neck were at the lower angle of the wound, which was dry without the use of a single ligature. The pouch was not readily found, but was discovered by the blunt dissector between the œsophagus and the vertebræ. It extended down behind the œsophagus nearly to the arch of the aorta. The sack was loosely attached and readily drawn out after blunt dissection. The œsophageal opening was difficult to find and was discovered by passing a probang. The fundus of the pouch was opened, its extent determined, the neck resected and united by an interrupted suture in the mucous lining and a Lambert suture in the body of the external layer.

The external wound was closed except a small opening where a gauze drain led down to the line of suture. The suture-material of the internal or mucous suture was fine catgut, the others silk. The patient recovered rapidly. The greatest discomfort was from the expectoration of mucus, the greatest pain from swallowing. The difficulty in swallowing gradually disappeared. The packing was removed on the fourth day. The stitches were out on the seventh. The wound was entirely healed on the tenth day. No difficulty has been experienced in swallowing since.

The second case presented symptoms that were not as marked, but the diagnosis seemed reasonably certain. Gastrostomy was considered, but deemed inadvisable, and operation on the stricture and removal of the diverticulum was decided upon. The operation disclosed a condition similar to the first case, but with the addition of a stricture cicatricial in character lined with a mucous membrane that was friable. In examining the œsophageal stricture the mucous membrane was torn, and it was decided to divide the stricture and increase the calibre of the œsophagus by utilizing the pouch as a portion of its wall. The operation was successful, and at no time since has there been any obstruction of the œsophagus or difficulty in the passage of food. The suture was not, however, sufficiently close, and leakage was expected, so gauze wicks were left down to the line of suture. The patient recovered with a fistula, which, however, decreased in size so that very little fluid and no solid food escaped.

The Surgical Treatment of Dilatation of the Stomach.—**BIDWELL** (*Lancet*, April 7, 1900) makes the following classes as the principal causes of

dilatation of the stomach: (1), cicatricial contraction of the pylorus, due usually to old gastric ulcer; (2), malignant disease of the pylorus; (3), adhesions outside the pylorus; (4), gastropptosis; (5) spasms of the pylorus from ulcer or from excess of free hydrochloric acid; (6), atony (?); (7), various neuroses; and (8), floating kidney on the right side.

In reference to the various methods of examination he points out that on inspection of a case of pyloric stenosis one often sees not only a rounded tumor caused by the dilated stomach, but waves of peristalsis passing across the abdomen from left to right. By auscultation we may hear splashing sounds within the stomach, and bubbling of gas in the region of the pylorus. Intubation is a most valuable method, and its use should never be omitted in the examination of a case of dilated stomach, except where active ulceration is strongly suspected. A soft rubber tube is swallowed by the patient with practically no discomfort, and the stomach contents can then be evacuated by expression on the stomach or by the attachment of a siphon-tube. It is usual, an hour before using the tube, to give Ewald's test breakfast, which consists of a plain roll and half a pint of warm water or weak tea; the fluid obtained after extraction is available for the application of chemical tests. To cause artificial distention of the stomach the two constituent parts of a Seidlitz powder may be given separately in a little water. The carbonic acid gas thus generated causes dilatation of the stomach, and enables one to define its limits with precision. This method, however, causes considerable discomfort to the patient, since carbonic acid gas causes spasms of the pylorus; less discomfort is experienced if the stomach be distended by air pumped in by means of the stomach-tube. The chemical examination of the stomach contents is undertaken to determine whether there is an excess or absence of free hydrochloric acid and whether lactic acid and acid lactates are present. The simplest test for hydrochloric acid is a solution of phloroglucin and vanillin in absolute alcohol. A few drops are placed on a china plate and a drop of the stomach filtrate is placed close to it, so that the edges of the two drops coalesce. The plate is then warmed, and if any free hydrochloric acid is present a red tinge appears; the amount can be estimated by making a control test with a 0.1 per cent. solution of the acid. The easiest test for lactic acid or acid lactates is to place a few drops of neutral ferric chloride solution in three drachms of 1 to 20 carbolic acid solution, and then add water until an amethyst blue color results; a few drops of the stomach filtrate added to this will produce a yellow coloration if lactic acid or acid lactates be present.

These tests are of importance in distinguishing between the various forms of dilated stomach; thus in malignant disease we usually get a large amount of lactic acid and an entire absence of hydrochloric; in gastric ulcer or cicatricial contracture due to this we find an excess of free hydrochloric acid, and in dilatation due to gastropptosis or to neuroses we often find the amount of free hydrochloric acid fairly normal. These are not, however, absolute rules, and have their exceptions. The presence of a tumor is not a guide in malignant cases; if the tumor can be felt the disease is probably too far advanced for radical relief. A distinct nodule can, however, be felt sometimes in cicatricial stenoses, and a small movable tumor has been felt in two instances by the author. These are not all the symptoms, but these are of special im-

portance. Coffee ground vomit is symptomatic of malignant disease that is well advanced; it may be absent in early stages and its clinical significance is slight.

The symptoms of malignant disease of the pylorus that indicate operation are: (1), pain, usually localized to the pyloric region, and felt in the back; (2), signs of dilatation of the stomach; (3), retching and vomiting, usually only after solids; (4), peristaltic waves seen over the stomach area; (5), absence of free hydrochloric acid from fluids obtained on passage of the stomach-tube or from vomited matter; (6), progressive emaciation; (7), obstinate constipation; and (8), progressive anemia. The age of forty is usually the dividing line between malignant and ulcerative stenosis.

The author then discusses the various methods of operating, and concludes as follows: This series of cases shows (16 cases) that operations for non-malignant stenosis of the stomach are very successful, the mortality is nil, and unless the case be left too late and the patient become exhausted with frequent vomiting, etc., there is no reason why the operation of pyloroplasty should not be absolutely successful. The most desirable operation in non-malignant stricture is pyloroplasty, since the opening in gastro-enterostomy seems to have a great tendency to contract. The same remark applies to Loretto's operation. The mortality of pyloroplasty is stated to be 11 per cent, but the author is inclined to think this too high in non-malignant cases. In malignant cases there is absolutely no question that the fatal issue in nearly all cases was due to the delay in seeking operative relief, and he is inclined to think that an operation undertaken in the early stages of malignant stricture will not be followed by a much higher mortality than a similar procedure in cicatricial stenosis. The important point, then, is to make an early diagnosis. Unfortunately, this is very difficult, and so an exploratory operation is to be recommended in doubtful cases. With regard to the nature of the operation, in cases where no tumor can be felt by palpation, and only a small one is found on opening the abdomen, pylorotomy should be performed. The risk is lessened by performing it in two stages, viz.: first, do a gastro-enterostomy, and then when the patient has been fed by the mouth for fourteen days, to build up the strength, the pylorotomy should follow. In advanced malignant disease gastro-enterostomy affords considerable temporary relief. He feeds his patients on the day following the operation by the mouth, and increases gradually without bad results.

A Case of Suppression of the Urine of Sixty Hours' Duration Treated by Operation.—JAFREY (*The Lancet*, March 3, 1900) reports the case of a man, aged fifty-three years, who was brought to him after a suppression of urine had existed for sixty hours. He had suffered a dragging pain in the region of the left kidney a month previously. Micturition was frequent; his urine appeared natural in color, and he had never seen any blood. No definite tumor could be felt until the third day after the suppression commenced, then an apparently hydronephrotic kidney was detected. He had never had any trouble with his urinary tract.

When first seen his expression was anxious and he was restless. There was marked perspiration, especially of the hands, and the tongue was fairly moist. The pulse was rapid (124) and intermittent, dropping a beat about

every seventh beat, and the respirations were 24. He complained of considerable pain and tenderness over the region of the left kidney. A large tumor in the lumbar region could be palpated, but was very tender.

The operation disclosed, instead of a hydronephrosis, a mass of blood-clots, more than a pint, between the perinephritic fat and the kidney, and on incising the capsule blood was found between the capsule and the cortex. The kidney was enlarged and congested, and its pelvis was filled with blood-clots. No calculus was felt. A sound detected none in the upper part of the ureter.

Two hours after the operation was completed and a drainage-tube introduced the dressings had to be changed, as they were soaked with urine. The tube slipped out during the night, and was not replaced. Thirty-six hours later practically all urine was passed by the urethra. The first urine passed contained blood, but not in any quantity; it gradually decreased and disappeared.

The author recalls a similar case, which was too near death for operation, in which an analogous condition was found in the kidney. A small, scale-like calculus was found obstructing the ureter. It would have been readily displaced by manipulation. The author believes that such may have been the cause in this case.

In reference to operation he holds that in these cases, if one is certain of the diagnosis, the sooner the kidney is explored the better. There is difficulty in many cases in ascertaining which kidney is affected. Laparotomy and the examination of both kidneys have been recommended, followed by lumbar incision and the removal of the stone, but there are many cases recorded which have been operated upon and in which no stone has been found.

The Technique of Lumbar Puncture.—CONNER (*New York Medical Journal*, May 12, 1900), in discussing the choice of location at which the puncture shall be made, says there are three chief requirements to be considered:

1. That the needle shall find ready entrance to the subarachnoid space.
2. That the tapping be made at a point least likely to admit of damage to the nervous structures of the canal.
3. That the fluid obtained shall be as rich as possible in sediment.

In reference to the selection of the point of puncture he says that with free access through three lower spaces he sees no reason for selecting the second space. The floating nerve-roots of the cauda equina move about so readily that they are not likely to be damaged, even if touched by the point of the needle.

The last requirement, that of obtaining fluid richest in sediment, is best fulfilled by tapping in the lumbosacral space. Puncture in the upright position should in general be confined to children. Whatever the position, as much ventral flexion of the spine should be secured as possible.

General anæsthesia in most cases is unnecessary. By anæsthetizing the skin with cocaine or a freezing spray the needle can usually be introduced with very little discomfort.

The determination of the landmarks can be readily made by counting from the twelfth dorsal to the first spinous tubercle of the sacrum. When the patient is very fat or muscular the point can usually be determined by a

line between the highest points of the iliac crests. When the spine is flexed this line usually passes near the upper edge of the fourth spine. Occasionally it will cross the space between the third and fourth spines.

"An antitoxin needle 4 or 5 cm. long and 1 mm. in diameter serves admirably in children. For adults the needle should be 8 or 9 cm. long and of a diameter sufficient to give the rigidity needed to penetrate the tough ligament readily.

"An approximately accurate idea of the pressure can be obtained by using a bent glass tube of small calibre. The short, horizontal limb is attached by a bit of rubber tube to the needle, while the long perpendicular limb will record the height of the column of fluid.

"After the desired space is located the interval between the spines is marked with the finger of the left hand, and the needle is introduced at a point opposite the upper edge of the lower spinous process and in a line just outside. The needle is directed very slightly upward and toward the median line, with a view to having it in the median line when it enters the subarachnoid space. In children the puncture can, as Quincke says, be made directly in the median line; but even in children the supraspinous and intraspinal ligaments often offer considerable resistance, and it is usually wiser to avoid these by going slightly to one side. As the needle passes through the interlaminar ligament the resistance is increased, and a slight, grating feeling is noticed; beyond this the needle slips in very easily, and is introduced until fluid begins to appear in the syringe.

"In children the fluid is reached at a depth of from 2 to 3 cm.; in adults, from 4 to 7 cm. If bony resistance is met in introducing the needle, the latter is to be withdrawn for a slight distance and directed at a slightly different angle. After the fluid appears the syringe is taken off and the fluid is collected in the sterile tube. In the horizontal position it flows drop by drop. In the upright position it frequently runs in a gentle stream. It is much better to let the fluid run from the needle than to aspirate with the syringe. The sudden reduction of pressure by aspiration may easily produce unpleasant symptoms. Occasionally, when the flow through the needle is unsatisfactory, it may, however, be necessary to apply gentle suction with the syringe.

"The amount of fluid to be removed will depend upon the purpose of the puncture. If for diagnosis alone, 10 or 15 c.cm. are usually ample; if for therapeutic purposes, it may be desirable to remove several times that amount. Perhaps the safest guide is the condition of the patient. Head-ache, faintness, or a change in the character of the pulse are indications to stop."

The Treatment of Some Forms of Appendicitis at Plombières without Operation.—KEITH (*The Lancet*, March 3, 1900) describes two cases which were distinctly benefited and one cured by the treatment at the baths of Plombières. The treatment consisted in forty- to fifty-minute baths at a temperature of not less than 34° C. and not more than 36° C. After the first few baths and for the last ten minutes of each succeeding one the Tivoli douche was used. "This is simply a spray of warm water coming out of a rose somewhere about an inch in diameter. It is allowed to play

against the affected part like a feather." This is a most important point. If it be used too strong it seems to do harm, as there is almost certain to be an attack of pain where the douche is improperly used in this way. After the baths the patient had to lie down in bed for half an hour.

Of course, this treatment is not adapted to all cases, nor can it cure a condition that can be relieved by surgical measures alone. This author's experience has shown him that the treatment at Plombières is very successful in cases of chronic diarrhœa, in constipation (though at first sight this may seem peculiar), in mucous colitis, and in appendicitis. The baths—and the treatment is practically limited to baths, though some people drink a small quantity of water before lunch and dinner—are recommended for various other conditions, especially for rheumatism.

PEDIATRICS.

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A Case of Pneumothorax Complicating Whooping-Cough.—FRANCIS VILLY (*The Medical Chronicle*, May, 1900, p. 99) reports a case of this rare complication of pertussis. The patient was a boy, aged three years, who was admitted to the hospital suffering from a severe attack of faucial diphtheria complicating whooping-cough, and convalescing from measles which had begun nine days before, and was accompanied by otitis media. The faucial condition cleared up rapidly, but meanwhile the attacks of coughing, which were slight and infrequent at first, became very numerous and severe. From the beginning the pulse rate had been rapid, as is often observed in those who suffer from diphtheria and whooping-cough together. The rate of respiration was also increased, but no abnormal physical signs were to be found in the lungs, nor in the heart beyond a shortening of the first sound. Definite abnormal physical signs were found in the lungs for the first time three weeks after admission to the hospital, in the form of râles heard all over both lungs, but especially at the bases; several small areas of rather doubtfully impaired resonance were noted. When first seen by the reporter, a week later, the child was exceedingly ill. The pulse was rapid, regular and full, but of very low tension, 145 to the minute. Paroxysms were frequent and very severe, and in the interval respiration was shallow and rapid, averaging 80 to the minute. Several small patches of bronchopneumonia were noted at the bases posteriorly. By the next day râles had become very marked at the left base, while just below and internal to the angle of the scapula the breath-sounds were distant, and the expiratory murmur was pro-